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ABSTRACT

This fact sheet offers information on blood cholesterol and its implications for a healthy heart. An explanation is given of the known facts about cholesterol and how it affects the body. A chart is provided that lists various foods and their fat and cholesterol contents. (JD)

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FACTS ABOUT...BLOOD CHOLESTEROL

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National Heart, Lung, and Blood Institute

FACTS ABOUT...

Blood Cholesterol

What is "blood cholesterol?" For that matter, what is cholesterol?
Pure cholesterol is an odorless, white, waxy, powdery substance. You cannot taste it or see it in the foods you eat.

Cholesterol is found in all foods of animal origin and is part of every animal cell. Your body uses cholesterol to make essential body substances such as cell walls and hormones, as well as for various other functions. Even if you didn't eat any cholesterol, your liver would manufacture enough for your body's needs.

Cholesterol is like other fat-like substances in that it will not mix with water. Therefore, to carry cholesterol and fat ("lipid") in the blood, the body wraps them in protein packages. This combination is called a "lipoprotein." Blood cholesterol is found in all the major lipoproteins, including the low density lipoproteins (LDLs) and the high density lipoproteins (HDLs).

How is blood cholesterol measured and how are the results expressed?
To measure your blood cholesterol level, a small blood sample is taken and the amount of cholesterol is determined in a laboratory. The cholesterol level is expressed as milligrams per deciliter or "mg/dl." The average blood cholesterol level for middle-aged men and women in the U.S. is about 215 mg/dl. This means that the cholesterol found in a deciliter of liquid (which is one-tenth of a liter or approximately one-tenth of a quart) weighs 215 milligrams. For comparison, 28,350 milligrams equals 1 ounce.

Why should I care about cholesterol?
High blood cholesterol is one of three main controllable *risk factors* for coronary heart disease. A risk factor is a habit, trait, or condition in a person that is associated with an increased chance (or risk) of developing a disease. The other two main controllable risk factors for coronary heart disease are high blood pressure and cigarette smoking. Any one of these risk factors increases an individual's chance of developing heart disease, and all three together may greatly increase heart disease risk, perhaps by ten times or more. Obesity and diabetes are other risk factors. Being a male or having a family history of premature heart disease will also add to an individual's risk of heart disease.

Table 1. Classification of Total Blood Cholesterol Levels

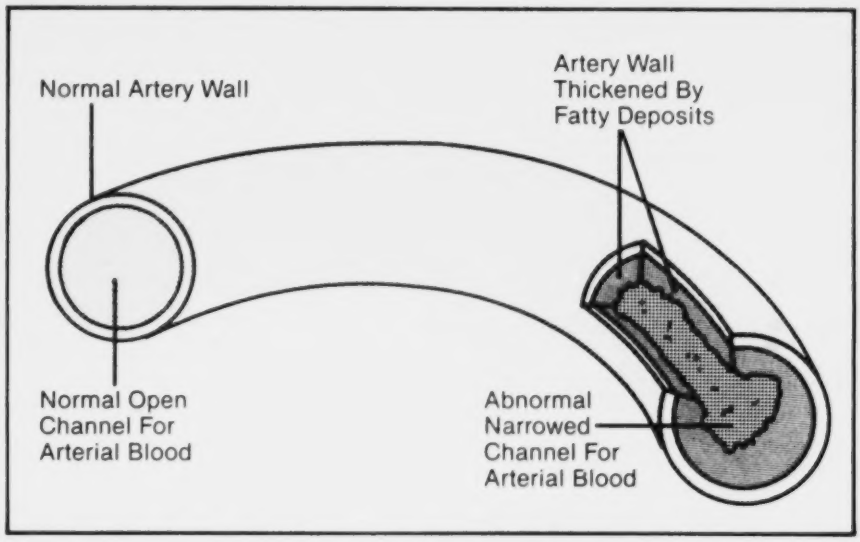
Less than 200 mg/dl	Desirable
200 to 239 mg/dl	Borderline-high
240 mg/dl and higher	High

Genetic and animal studies have shown that elevated levels of blood cholesterol, whether caused by genetic defects or dietary excesses, lead to early development of hardening of the arteries and coronary heart disease. Scientific studies of large population groups (epidemiologic studies) have shown that people with high blood cholesterol have more chance of developing coronary heart disease than do people with lower levels of cholesterol, and that the chances of developing coronary heart disease increase in proportion to the amount the cholesterol is elevated, especially for values over 200 mg/dl. In the United States, people with a blood cholesterol of 240 mg/dl or higher have more than two times the risk of developing heart disease as do those with a level of under 200 mg/dl. About 25 percent of adults in the United States have blood cholesterol levels over 240 mg/dl and more than half of U.S. adults have levels over 200 mg/dl. Recently, blood cholesterol levels for adults have been classified as (1) desirable (less than 200 mg/dl), (2) borderline-high (200 to 239 mg/dl), and (3) high (240 mg/dl and above). These categories apply to all adults over age 20, regardless of age or sex, and are part of medical guidelines defined by the Adult Treatment Panel of the National Cholesterol Education Program in October 1987.

In adults, a total blood cholesterol level above 240 mg/dl warrants medical attention to help bring it down. However, levels above 200 mg/dl also increase the risk of heart disease and may require further evaluation, depending on whether other heart disease risk factors are present. When persons are evaluated for borderline-high blood cholesterol levels, other factors that increase their risk status for coronary heart disease are low HDL-cholesterol levels (below 35 mg/dl); advanced hardening of the arteries in the head, legs, feet, hands, or arms; angina or other evidence of blockages in the arteries serving the heart; or a previous heart attack. These factors are considered in addition to the main heart disease risk factors mentioned earlier.

A physician can assess a person's risk for heart disease, offer advice on how to make dietary changes which are generally sufficient to lower blood cholesterol to an acceptable level, and monitor progress toward cholesterol reduction. Persons with very high blood cholesterol levels might also be prescribed a cholesterol-lowering drug.

What is coronary heart disease and how important is it to the average American?
Almost 30 percent of the nearly 2 million deaths in this country each year are the result of coronary heart disease. Most coronary heart disease is due to blockages in the arteries that supply blood to the heart muscle. Fat and cholesterol, circulating in the blood, are deposited in the inner walls of the arteries. Over the years, scar tissue and other debris build up as more fat and cholesterol are deposited. The arteries become narrower and narrower, much as old water pipes build up scaly mineral deposits. This process is known as atherosclerosis. When one or more of the arteries is seriously narrowed, and generally when an obstructing blood clot forms at a site of narrowing, the result is a heart attack.


Normal Artery Wall
Artery Wall Thickened By Fatty Deposits
Normal Open Channel For Arterial Blood
Abnormal Narrowed Channel For Arterial Blood

What factors influence my blood cholesterol level?
Diets high in saturated fat and cholesterol play a major role in the high levels of blood cholesterol found in millions of Americans. Saturated fat is the key dietary factor raising blood cholesterol levels. In contrast, dietary cholesterol has a smaller effect on blood cholesterol levels. Obesity, primarily due to an intake of calories that exceeds the needs of the body, can also lead to high cholesterol values.

In some persons, inherited tendencies affect blood cholesterol levels. When adults try to lower their blood cholesterol by dietary changes, the size of the reduction will be influenced, in some people, by whether or not they are high or low responders, that is whether their body tends to make big or small changes in blood cholesterol levels in response to dietary changes. This response rate is somewhat genetically determined. Only about 1 in every 500 adults has an inherited tendency to have very high blood cholesterol levels. However, even among these persons, dietary changes can do much to bring the high levels down. Most people can lower their blood cholesterol levels by following a diet that is lower in saturated fat and cholesterol.

Age and sex also influence blood cholesterol levels. In the United States, blood cholesterol levels in men and women start to rise at about age 20. The average blood cholesterol levels in women prior to menopause (45-60 years) are lower than those of men of the same age. After menopause, however, the average cholesterol level of women usually increases to a level higher than that of men. In men, blood cholesterol levels off around age 50 and the average blood cholesterol level declines slightly after age 50. Use of oral contraceptives can increase blood cholesterol levels in some women, as can pregnancy. However, blood cholesterol should return to normal 20 weeks after childbirth.

What are LDL and HDL?
LDL and HDL refer to two types of lipoproteins, packages of fat, cholesterol, and protein that are made by the body to transport fat and cholesterol through the blood.

LDLs are the low density lipoproteins that contain the greatest amounts of cholesterol and may be responsible for depositing cholesterol in the artery walls. For that reason they are sometimes known as "bad" cholesterol.

HDLs are the high density lipoproteins. HDLs contain the greatest amounts of protein and small amounts of cholesterol. They are believed to take cholesterol away from cells in the artery wall and transport it back to the liver for reprocessing or removal from the body. Researchers have noted that persons with higher levels of HDL have less heart disease. Thus HDLs have become known as the "good" cholesterol. Women generally have higher levels of HDL, and this may explain in part why they have fewer heart attacks than do men. In some cases, but certainly not in all cases, some women may even have a high total cholesterol due to a high HDL level.

What can I do to raise my level of HDLs?
Higher levels of HDL usually are found in people who exercise regularly, don't smoke, and stay at desirable weight. Therefore, quitting smoking, exercising regularly, and losing weight (if overweight) are ways to raise HDL levels. Adopting these practices is also good for general health.

Should I have my blood cholesterol checked?
Yes, blood cholesterol should be checked periodically as part of a physical examination. It is recommended that all adults age 20 and over have their blood cholesterol measured at least once every 5 years. Cholesterol measurement usually requires that a blood specimen be obtained by drawing blood from the arm. The sample is then sent to the laboratory for analysis. Sometimes, to get a complete picture of the cholesterol fractions in the blood, the doctor will ask that the report be made in terms of the amount of cholesterol carried on the low density lipoproteins (LDL-cholesterol) and on the high density lipoproteins (HDL-cholesterol).

In screening programs, blood cholesterol may often be measured using a drop of blood obtained by pricking a finger, an almost painless procedure. The tiny "fingerstick" blood sample is then analyzed by a portable machine that gives a cholesterol value within minutes. Such methods provide approximate values for blood cholesterol levels. However, because of variations due to differences in sample handling techniques, types of machines used, and training of volunteer personnel, high or borderline-high values should be rechecked by a second sample taken by a physician.

Are there benefits from reducing blood cholesterol?
The benefits of lowering blood cholesterol are real. It will slow the fatty buildup in the arteries and in some cases even reverse the process. Lowering blood cholesterol also definitely reduces risk of a heart attack and of death caused by a heart attack.

In a study of coronary bypass patients, reported in 1987, substantial reduction of blood cholesterol led to slowing of the atherosclerotic process and, in some cases, to its partial reversal. In the beginning of the study, all the men had fatty blockages in key arteries serving the heart that were severe enough to require a bypass operation. Among persons who lowered their blood cholesterol markedly, there were fewer new fatty deposits and fewer increases in size of

existing deposits than in the group who did not lower their blood cholesterol as much. In addition, there was some shrinkage of fatty deposits associated with marked lowering of blood cholesterol levels during the 2 years of the study.

Another major research study proved that people who have high blood cholesterol and who reduce it also reduce their risk of heart attack. At the beginning of this study, all persons had blood cholesterol levels in the "high" category but did not have any heart disease. After 6 years, among persons who lowered their high blood cholesterol substantially, there were fewer heart attacks or deaths from heart attacks than in the group who did not lower their levels as much. In fact, among the adults in this study, for each 1 percent reduction in total blood cholesterol, there was roughly a 2 percent reduction in the number of heart attacks. This means that, if blood cholesterol levels are reduced by 10-15 percent, the risk of heart attack drops by 20-30 percent.

The results of these two major studies and the overwhelming body of scientific evidence support the concept that high blood cholesterol increases risk of coronary heart disease and that lowering of high blood cholesterol levels, especially LDL-cholesterol, decreases the risk of coronary heart disease. This same evidence led the National Heart, Lung, and Blood Institute to launch the National Cholesterol Education Program (NCEP) to help educate people about reducing high blood cholesterol.

What are saturated fat and unsaturated fat and where are they found in foods?

The fat we eat contains fatty acids that are saturated or unsaturated, terms that refer to the chemical structure of the fatty acids in the fat molecules. Unsaturated fatty acids are further divided into two kinds—monounsaturated fatty acids and polyunsaturated fatty acids. Food fats contain a mixture of the three kinds of fatty acids. When a fat contains a large proportion of saturated fatty acids, it is said to be "a saturated fat." Alternatively, the same fat can be called "highly saturated" or "high in saturates." When a fat contains a large proportion of polyunsaturated fatty acids, it is often called "a polyunsaturated fat," but it can also be said to be "high in polyunsaturates" or "highly polyunsaturated." Similarly, when a fat or oil contains a large proportion of monounsaturated fatty acids, it is often called a "monounsaturated fat." However, it is also said to be "highly monounsaturated" or "high in monounsaturated fatty acids."

The major sources of saturated fatty acids in the diet are the fats in meats and dairy products. Beef fat and butter fat are rich in saturated fatty acids, as can be seen in Table 2. Butter fat is the fat found in milk, cheeses, cream, ice cream, and other products made from milk or cream. However, dairy products that are low in fat are also lower in saturated fat. In contrast, the fat from poultry or fish is, in general, more unsaturated than beef fat or butterfat. A few vegetable fats are quite high in saturated fatty acids. These are coconut oil, palm kernel oil, palm oil, and the cocoa fat found in chocolate. These four are not available for consumers to purchase but are often used in commercial baked goods and other processed foods.

Other vegetable oils, while composed of all three types of fatty acids, are rich in polyunsaturated or monounsaturated fatty acids. Vegetable oils with the highest amounts of polyunsaturates are safflower oil, sunflower oil, corn oil, soybean oil, and cottonseed oil. Monounsaturated fatty acids are found in large amounts in olive oil, canola oil, and peanut oil. A few foods from plants (nuts or avocado, for example) do contain substantial total fat, although their fat is largely in an unsaturated form. Hydrogenated

Table 2: Fats and Oils: Differences in Fatty Acids Are Important

Vegetable Oils and Shortening	Polyunsaturated Fatty Acids*	Monounsaturated Fatty Acids*	Total Unsaturated Fatty Acids**	Saturated Fatty Acids*
Safflower oil	75%	12%	86%	9%
Sunflower oil	66%	20%	86%	10%
Corn oil	59%	24%	83%	13%
Soybean oil	58%	23%	81%	14%
Cottonseed oil	52%	18%	70%	26%
Canola oil	33%	55%	88%	7%
Olive oil	8%	74%	82%	13%
Peanut oil	32%	46%	78%	17%
Soft tub margarine***	31%	47%	78%	18%
Stick margarine***	18%	59%	77%	19%
Household vegetable shortening***	14%	51%	65%	31%
Palm oil	9%	37%	46%	49%
Coconut oil	2%	6%	8%	86%
Palm kernel oil	2%	11%	13%	81%
Animal Fats				
Tuna fat****	37%	26%	63%	27%
Chicken fat	21%	45%	66%	30%
Lard	11%	45%	56%	40%
Mutton fat	8%	41%	49%	47%
Beef fat	4%	42%	46%	50%
Butter fat	4%	29%	33%	62%

*Values are given as percent of total fat.
**Total unsaturated fatty acids = polyunsaturated fatty acids + monounsaturated fatty acids. The sum of total unsaturated fatty acids + saturated fatty acids will not add to 100 percent because each item has a small amount of other fatty substances that are neither saturated nor unsaturated. The size of the "other" category will vary.
***Made with hydrogenated soybean oil + hydrogenated cottonseed oil.
****Fat from white tuna, canned in water, drained solids.

vegetable oils and solid vegetable shortenings are lower in polyunsaturated fatty acids and higher in both saturated and monounsaturated fatty acids than the unhydrogenated versions of the same oils.

What is dietary cholesterol and where is it found in foods?
Dietary cholesterol is the cholesterol found in the foods we eat. Although it is not visible to the eye, it is found in all foods of animal origin, including meat, fish, poultry, and dairy products. Since cholesterol is not the same as fat, a food may contain substantial cholesterol but only a moderate amount of saturated fat (for example, an egg yolk). Foods of plant origin have no cholesterol. These include vegetables, fruits, grains (which are made into cereals and flours), nuts and seeds, and vegetable oils.

How do dietary fats and cholesterol influence blood cholesterol levels?
In the typical American diet, the saturated fat content is the strongest contributor to raising blood cholesterol. The cholesterol in foods also contributes, but to a much lesser extent than saturated fat. Polyunsaturated fats will lower blood cholesterol, but only about half as much as saturated fats will raise it. In other words, if eating a given amount of saturated fat will raise your blood cholesterol by 10 percent, the same amount of polyunsaturated fat will lower blood cholesterol, but only by about 5 percent. Unsaturated fats in general (including both monounsaturates and polyunsaturates), when substituted for saturated fat, will lower blood cholesterol levels.

Does the average American eat too much fat and cholesterol?
Fat is a major source of calories in the American diet, contributing about 35-40 percent of the total caloric intake. For comparison, in Japan where heart disease is uncommon, the typical diet contains only about 25 percent fat. The average American eats some 350 to 450 mg of cholesterol each day.

For adults with high blood cholesterol levels, the National Cholesterol Education Program's Adult Treatment Report recommends a reduction in daily fat intake to less than 30 percent of calories (with less than 10 percent of calories from saturated fat, no more than 10 percent from polyunsaturated fat, and 10 to 15 percent from monounsaturated fat) and a reduction in dietary cholesterol to less than 300 mg per day. Such dietary changes will help lower blood cholesterol and reduce the overall risk of heart disease.

Can I lower my blood cholesterol level?
Many studies have shown that blood cholesterol can be lowered by dietary changes, and, on the average, a 10 to 15 percent reduction in blood cholesterol can be achieved. Some people will do even better. Depending on the initial level, on how much eating habits are changed, and on the body's response, this can translate, over several months, into a blood cholesterol reduction of 30 to 55 mg/dl. The higher the initial blood cholesterol level, the greater the overall reduction that can be expected. Also, people whose diets are high in saturated fat will probably see larger reductions than persons whose diets are low in saturated fat. *Since saturated fat raises blood cholesterol more than anything else in the diet, the most effective way to lower blood cholesterol is to eat less saturated fat.*

How much blood cholesterol is lowered depends on how much saturated fat and cholesterol are eliminated from the diet and on how consistently a low-saturated fat, low-cholesterol eating style can be maintained. The size of blood cholesterol reduction also depends, in some persons, on whether they are high or low responders, that is, whether their body tends to respond to dietary changes with big or small changes in blood cholesterol.

For anyone who is overweight, reduction of weight will often lower blood cholesterol, especially the LDL-cholesterol. Reducing dietary fats, the most concentrated source of calories, is essential in weight reduction. All fats, whether they are saturated or unsaturated, are a rich source of calories. One gram of fat provides about 9 calories, compared to about 4 calories for a gram of protein or carbohydrate. For persons who are of desirable weight, blood cholesterol can be lowered by cutting down on saturated fat and cholesterol; by replacing saturated fatty acids with polyunsaturated fatty acids, monounsaturated fatty acids, and complex carbohydrates; and by monitoring the daily intake of calories so that weight remains constant.

How do I lower my blood cholesterol?
Dietary changes that work together to reduce total fat, especially saturated fat, and cholesterol will work to lower blood cholesterol levels in most people. A number of approaches have been proven to help. For persons whose blood cholesterol is too high, the following dietary changes are recommended:

1. Eat less total fat
—by eating less fat and oil
—by eating fewer high fat foods.
High fat foods often contain large amounts of saturated fat.

2. Eat less saturated fat
—by eating fewer foods high in saturated fat
—by replacing saturated fat with unsaturated fat when possible.

3. Eat less cholesterol
—by choosing fewer or eating smaller amounts of high cholesterol foods.

4. Eat more complex carbohydrates (starch and fiber). Foods high in complex carbohydrates are usually low in fat and contain no cholesterol.

5. Lose weight, if overweight
—by decreasing the number of calories taken in and increasing the number of calories used (exercise).

These steps are consistent with the *Dietary Guidelines for Americans* which have been developed by the U.S. Department of Agriculture and the U.S. Department of Health and Human Services. Four of the seven dietary guidelines include advice to eat a variety of foods, to maintain desirable weight, to eat foods with adequate starch and fiber, and to avoid too much fat, saturated fat, and cholesterol. Eating a variety of foods will help supply essential nutrients in the diet. The other three dietary guidelines advise avoiding too much sugar, avoiding too much sodium, and moderation in drinking alcoholic beverages.

For persons with high blood cholesterol, some key points to remember and some practical steps for following the five dietary changes that help to lower blood cholesterol levels:

To eat less total fat:
Key points to remember
- Within any food category, there are high fat and low fat items. Examples are given in Table 3.
- Sausage and most processed luncheon meats are high in fat and saturated fat.
- Cream, sour cream, ice cream, butter, and many cheeses are high in fat and saturated fat.

Practical ideas
- Choose low fat items when selecting foods.
- Choose fish, poultry, lean cuts of meat, and eat moderate portions.

- Trim fat from meat and remove skin from poultry before cooking and eating.
- Choose low fat dairy products, such as skim or low fat milk, low fat yogurt, low fat cheeses, sherbet, or ice milk, instead of high fat dairy products.
- Bake, roast, or broil foods, instead of frying.
- Add less fat and shortening to foods when cooking.

To eat less saturated fat:
Key points to remember
- Steps that reduce total fat can also work to reduce saturated fat as well.
- Most animal fats generally contain high proportions of saturated fat (as shown in Table 2) while the fat in chicken and fish contain higher proportions of polyunsaturated fatty acids.
- The vegetable oils from palm kernel, coconut, and palm, as well as cocoa fat, contain large proportions of saturated fat.
- Vegetable oils with the highest proportions of polyunsaturated fat are safflower, sunflower, corn, soybean, and cottonseed oils.
- Many margarines are lower in saturated fat and higher in unsaturated fats than butter.

Practical ideas
- Choose low fat dairy products, lean cuts of meat, chicken, and fish.
- Choose low fat baked goods made with oils high in unsaturated fat and low in saturated fat.
- When using fats and oils, use only small amounts and replace those high in saturated fat with items high in polyunsaturates or high in total unsaturates.
- Read the nutrient section of food labels to choose items that are low in saturated fatty acids.

To eat less cholesterol:
Key points to remember
- Cholesterol is found in high amounts in organ meats (liver, kidney, sweetbread, brain) and egg yolks.

Practical idea
- Eat only moderate portions of high cholesterol foods, or choose them less often.

To eat more complex carbohydrates:
Key point to remember
- Vegetables, fruits, cereal grains, dried peas and beans, rice, and pasta contain complex carbohydrates, little or no saturated fat, and no cholesterol.

Practical idea
- Choose foods high in complex carbohydrates more often and use them in place of high fat foods.

To help lose weight, if overweight:
Key point to remember
- Fats are high in calories. Fat and oils supply 9 calories per gram as compared to protein and carbohydrates which supply only 4 calories per gram.

Practical idea
- Reduce the total amount of fat eaten each day, to help reduce caloric intake.
- Increase daily physical activity.

How much fat and cholesterol are contained in basic foods and where can I find more information about this?
Foods differ in the amount of saturated fat and cholesterol they contain. Table 3, the Fat and Cholesterol Comparison Chart, gives values for a few basic foods that are grouped into categories. Within each category, there are higher and lower fat items. The examples are meant to illustrate these differences and not to endorse or slight any one food.

The chart shows the fat and cholesterol in a specified amount of food. Values for dairy products and oils and fats are all given for a one cup volume. Values for meats, poultry, seafood, nuts, fruits and vegetables are given for 100 grams, which are equal to 3½ ounces. However, grams of fat actually eaten will depend on the portion size used for a meal as well as the type of ingredients selected.

It is important to remember that prepared dishes, which are made from a combination of basic foods, will contain amounts of fat related to the fat-containing ingredients, especially the high fat ones. Addition of fat during frying or basting will also add to the fat content of the final meal. Prepared foods include recipes made at home, takeout or fast food, restaurant food, and manufactured, prepackaged items.

Fat and cholesterol values for only a few items are listed in Table 3. To see how other foods rank in cholesterol and saturated fat, more extensive lists should be consulted. Commercially prepared foods may have values available from the manufacturers or listed on the labels.

To find more information on the fat and cholesterol content of common foods and on cooking and eating tips for lowering high blood cholesterol, consult the *Community Guide to Cholesterol Resources,* a resource list produced by the National Cholesterol Education Program; National Heart, Lung, and Blood Institute; C-200; Bethesda, Maryland 20892. This list explains how to obtain many useful publications, including *U.S.D.A. Handbook 72* that gives nutrient values for many different foods, and *Food Composition for Convenience Foods,* a list of values for many fast foods and manufactured foods as compiled from manufacturers' data by the Central Indiana Dietetic Association.

If your doctor has diagnosed you as having a high blood cholesterol, ask for two other pamphlets: *Eating to Lower Your High Blood Cholesterol* and *So You Have High Blood Cholesterol* that are also available from the National Cholesterol Education Program.

Table 3: Fat and Cholesterol Comparison Chart

Example of	Item	Saturated Fatty Acids (grams)	Total Fat (grams)	Cholesterol (milligrams)
Beef	Top round, lean only, broiled	2.2	6.2	84
100 grams	Ground lean, broiled medium	7.3	18.5	87
(3½ ounces)	Beef prime rib, meat, lean and fat, broiled	14.9	35.2	86
Processed Meats	Dutch loaf, pork and beef	6.4	17.8	47
100 grams	Sausage smoked, link, beef and pork	10.6	30.3	71
(3½ ounces)	Bologna, beef	11.7	28.4	56
	Frankfurter, beef	12.0	29.4	48
	Salami, dry or hard, pork, beef	12.2	34.4	79
Pork	Ham steak, extra lean	1.4	4.2	45
100 grams	Pork, center loin, lean only, braised	4.7	13.7	111
(3½ ounces)	Pork, spareribs, lean and fat, braised	11.8	30.3	121
Poultry	Chicken broilers or fryers, roasted:			
100 grams	• Light meat without skin	1.3	4.5	85
(3½ ounces)	• Light meat with skin	3.1	10.9	84
	• Dark meat without skin	2.7	9.7	93
	• Dark meat with skin	4.4	15.8	91
	• Chicken skin	11.4	40.7	83
Fin Fish	Cod, Atlantic, dry heat cooked	0.1	0.7	58
100 grams	Perch, mixed species, dry heat cooked	0.2	1.2	115
(3½ ounces)	Snapper, mixed species, dry heat cooked	0.4	1.7	47
	Rockfish, Pacific, mixed species, dry heat cooked	0.5	2.0	44
	Tuna, bluefin, dry heat cooked	1.6	6.3	49
	Mackerel, Atlantic, dry heat cooked	4.2	17.8	75
Mollusks	Clam, mixed species, moist heat cooked	0.2	2.0	67
100 grams	Mussel, blue, moist heat cooked	0.9	4.5	56
(3½ ounces)	Oyster, eastern, moist heat cooked	1.3	5.0	109
Crustaceans	Crab, blue, moist heat cooked	0.2	1.8	100
100 grams	Lobster, northern, moist heat cooked	0.1	0.6	72
(3½ ounces)	Shrimp, mixed species, moist heat cooked	0.3	1.1	195
Liver and Organ Meats	Chicken liver, cooked, simmered	1.8	5.5	631
	Beef liver, braised	1.9	4.9	389
100 grams	Pork brains, cooked	2.2	9.5	2,552
(3½ ounces)				
Eggs				
(1 yolk = 17 grams)	Egg yolk, chicken, raw	1.7	5.6	272
(1 white = 33 grams)	Egg white, chicken, raw	0	trace	0
(1 whole = 50 grams)	Egg, whole, chicken, raw	1.7	5.6	272
Nuts and Seeds	Chestnuts, European, roasted	0.4	2.2	0
100 grams	Almonds, dry roasted	4.9	51.6	0
(3½ ounces)	Sunflower seed kernels, dry roasted	5.2	49.8	0
	Pecans, dry roasted	5.2	64.6	0
	Walnuts, English, dried	5.6	61.9	0
	Pistachio nuts, dried	6.1	48.4	0
	Peanut kernels, dried	6.8	49.2	0
	Cashew nuts, dry roasted	9.2	46.4	0
	Brazil nuts, dried	16.2	66.2	0
Fruits	Peaches, raw	0.010	0.09	0
100 grams	Oranges, raw	0.015	0.12	0
(3½ ounces)	Strawberries, raw	0.020	0.37	0
	Apples, with skin, raw	0.058	0.36	0

Example of	Item	Saturated Fatty Acids (grams)	Total Fat (grams)	Cholesterol (milligrams)
Vegetables	Cooked, boiled, drained:			
100 grams	• Potato, without skin	0.026	0.10	0
(3½ ounces)	• Carrots	0.034	0.18	0
	• Spinach	0.042	0.26	0
	• Broccoli	0.043	0.28	0
	• Beans, green and yellow	0.064	0.28	0
	• Squash, yellow, crookneck	0.064	0.31	0
	• Corn	0.197	1.28	0
	Avocado, raw, without skin or seed:			
	• Florida origin	1.74	8.86	0
	• California origin	2.60	17.34	0
Grains and Legumes	Split peas, cooked, boiled	0.054	0.39	0
	Red kidney beans, cooked, boiled	0.07	0.5	0
100 grams	Oatmeal, cooked	0.19	1.0	0
(3½ ounces)				
Milk and Cream	Skim milk	0.3	0.4	4
1 cup	Buttermilk (0.9% fat)	1.3	2.2	9
(8 fluid ounces)	Low fat milk (1% fat)	1.6	2.6	10
	Whole milk (3.7% fat)	5.6	8.9	35
	Light cream	28.8	46.3	159
	Heavy whipping cream	54.8	88.1	326
Yogurt and Sour Cream	Plain yogurt, skim milk	0.3	0.4	4
	Plain yogurt, low fat (1.6%)	2.3	3.5	14
1 cup	Plain yogurt, whole milk	4.8	7.4	29
(8 fluid ounces)	Sour cream	30.0	48.2	102
Soft Cheeses	Cottage cheese, low fat (1% fat)	1.5	2.3	10
1 cup	Cottage cheese, creamed	6.0	9.5	31
(8 fluid ounces)	Ricotta, part skim	12.1	19.5	76
	Ricotta, whole milk	18.8	29.5	116
	American processed spread	30.2	48.1	125
	Cream cheese	49.9	79.2	250
Hard cheeses	Mozzarella, part skim	22.9	36.1	132
(8 ounces)	Mozzarella, whole milk	29.7	49.0	177
	Provolone	38.8	60.4	157
	Swiss	40.4	62.4	209
	Blue	42.4	65.1	170
	Brick	42.7	67.4	213
	Muenster	43.4	68.1	218
	American processed	44.7	71.1	213
	Cheddar	47.9	75.1	238
Vegetable Oils and Shortening	Canola oil	14.8	218.0	0
	Safflower oil	19.8	218.0	0
1 cup	Sunflower oil	22.5	218.0	0
(8 fluid ounces)	Corn oil	27.7	218.0	0
	Olive oil	29.2	216.0	0
	Soybean oil	31.4	218.0	0
	Margarine, regular soft tub*	32.2	182.6	0
	Margarine, stick or brick*	34.2	182.6	0
	Peanut oil	36.4	216.0	0
	Household vegetable shortening*	51.2	205.0	0
	Cottonseed oil	56.4	218.0	0
	Palm oil	107.4	218.0	0
	Coconut oil	188.5	218.0	0
	Palm kernel oil	177.4	218.0	0
Animal Fats	Chicken fat	61.2	205.0	174
1 cup	Lard	80.4	205.0	195
(8 fluid ounces)	Mutton fat	96.9	205.0	209
	Beef fat	102.1	205.0	223
	Butter	114.4	183.9	496

*Made with hydrogenated soybean oil + hydrogenated cottonseed oil.